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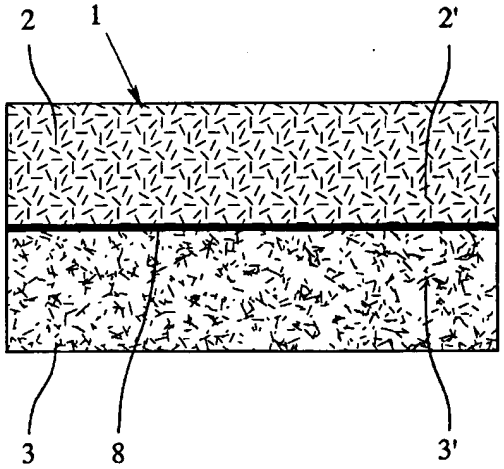
(54) Title: FLAT MOP COVER FOR A MOPPING DEVICE FOR MOPPING SURFACES TO BE CLEANED



(57) Abstract: The invention relates to a flat mop cover for a mopping device for mopping surfaces to be cleaned, comprising at least two active layers (2, 3) of preferably different properties forming corresponding cleaning surfaces (2', Y), and attachment means (5) for attaching the flat mop cover (1) to a mop holder (6). The improvement is realized in that at least two of the active layers (2, 3) are hydraulically separated by a liquid-impermeable or otherwise not liquid-transporting, separating section (8, 8'). Preferably two active layers (2, 3) are positioned laterally next to each other and the separating section (8) is a separating strip between the layers. However, likewise in may be that two active layers (2, 3) are positioned on top of each other forming two opposite, alternately usable cleaning surfaces (2', 3'), preferably of about the same size, and the separating section (8) is a liquid-impermeable separating layer between the two active layers (2, 3).

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Flat Mop Cover for a Mopping Device for Mopping Surfaces to be Cleaned

The invention relates to a flat mop cover for a mopping device for mopping surfaces to be cleaned comprising the features of the introductory part of claim 1.

Mopping devices for mopping surfaces to be cleaned are widely known and in extensive use in professional and non-professional floor cleaning. They use a mop holder with a removably attached flat mop cover from textile material made from natural or synthetic fibers including and increasingly using micro-fibers. The present invention deals with flat mop covers for use with mopping devices.

Flat mop covers, as well, are widely known for use in mopping devices for mopping surfaces to be cleaned. The prior art forming the starting point of the present invention (DE 94 02 509 U1) describes a flat mop cover comprising two active layers of different properties forming corresponding cleaning surfaces, wherein both active layers are positioned laterally next to each other and are connected at a lengthwise extending separating line. In this prior art, the two active layers together form cleaning surfaces next to each other with a mop holder positioned on top of both layers. Attachment means for attaching the mop cover to the mop holder are positioned on top of the mop cover.

In this prior art, the cleaning surfaces next to each other can have different properties, so that it is possible with one mop cover to first scour or scrub the floor with a relatively rough material and then clean it with a relatively soft material or first clean it wet and then dry it immediately afterwards with a dry material.

The attachment means are usually positioned near the transversal edges of the mop cover, but may be placed along the longitudinal edges thereof, as well. The attachment means are described as insertion pockets or holding strips. Velcro means (burr means) or other attachment means such as clamping means are mentioned, as well.

Further prior art shows a mop cover for a three-dimensional mop holder where two active layers are connected at one longitudinal edge of each layer by means of a plastic strip of liquid-impermeable material. The two active layers with the plastic strip together form a pocket-like mop cover. So, this is not a flat mop

cover (DE 94 15 071 U1). However, three-dimensional mop holders can be used with flat mop covers, too, which may then form two alternately usable cleaning surfaces (US 5,864,914 A).

Further prior art (DE 295 20 193 U1) shows a flat mop cover with three layers of textile material, namely two active layers positioned on top of each other and forming two opposite, alternately usable cleaning surfaces of about the same size, and a textile separating layer between the two active layers as a backing material. Pockets within both active layers allow attachment to a mop holder from both sides, so that the mop cover may be attached to the mop holder with each of the two active layers. This, again, shall allow use of one mop cover with different properties.

Finally, in prior art that is admitted here as being relevant and well-known from practical products, a mop cover with a lengthwise extending edge is used with a corresponding mop holder, where an enlarged rib of plastic material extending lengthwise and fitting into a groove on the mop holder is provided. This mop cover, even if attached to the mop holder, hangs freely from the mop holder. One side of the mop cover may be used separately from the mop holder, whereas the other side of the mop cover is used traditionally below the mop holder to clean a surface.

In general for mop covers, washing is an issue. If the mop cover suffers from varying shrinkage of the textile material used in the different layers or sections and carries textile material that is not used for cleaning, additional washing time and expense are the result.

The object of the present invention is to provide a mop cover for use in a mopping device, which allows efficient two-step mopping with active layers of different properties. Touch-free removal and re-attachment of the mop cover to a mop holder shall be possible as in the prior art.

The above-mentioned object of the present invention is met with a flat mop cover comprising the features of the introductory part of claim 1 and, in addition, the features of the characterizing part of claim 1. Preferred embodiments of the inventive flat mop cover are described in the sub-claims.

An interesting idea of the present invention is to separate the at least two active layers by a liquid-impermeable or otherwise not liquid transporting separating section. In the prior art, there were structurally different active layers, but separating only by a sewn seam, or the like. So, if one active layer were used with a cleaning liquid, this cleaning liquid would be immediately transferred into the other active layer next to the wet active layer. This transfer is now inhibited by the liquid-impermeable or otherwise not liquid transporting separating section. This increases efficiency of two-step mopping.

The separating section may be used between two active layers positioned laterally next to each other as in the prior art of DE 94 02 509 U1. However, similarly, the separating section may be provided between two active layers that are positioned on top of each other, similar to the prior art of DE 295 20 193 U1. Both systems may be combined in a multi-layer flat mop cover.

The invention may be used even with the specific flat mop cover disclosed in the admitted prior art that is attached to the mop holder by rib/groove attachment on one longitudinal edge thereof. This kind of flat mop cover may be particularly advantageous, because the wet part of the mop cover may be pressed within a pressing device, even if the dry part of the flat mop cover is kept free from the pressing device.

The material used for the active layers may be a woven fabric with all kinds of specific features as disclosed in the prior art mentioned in the introductory part of the description. However, non-woven or knitted fabric may be used, as well, and sometimes with particular advantages. The material can be made of natural or synthetic fibers, in particular of polyester micro-fiber or of combinations of different fibers for backing and trimming. Insofar, reference is made to a co-pending PCT application of the applicant, namely PCT/EP 2004/.....; attorney's reference 04.0739. The content of this parallel application is incorporated here as supplementary disclosure.

In an especially preferred embodiment, it is provided that three active layers are provided and combined in an asymmetrical one-layer/two-layer combination with the attachment means positioned on top of the one-layer section. The ad-

vantages of both systems described before are combined here and can be used with a traditional mop holder for insertion pockets or holding strips (see also co-pending PCT case WO 03/020100, attorney's reference 03.0453).

Now, further features, advantages and applications of the invention can be obtained from the following detailed description of preferred embodiments of the invention taken in conjunction with the accompanying drawings. In the drawings

Fig. 1 is a top plan view of a flat mop cover seen from the cleaning surfaces thereof,

Fig. 2 is a top plan view of the mop cover of Fig. 1, now from the opposite side,

Fig. 3 is a flat mop cover according to Fig. 2, now with a mop holder positioned thereon,

Fig. 4 is a perspective view of a second embodiment of a mop cover and an enlarged sectional view thereof,

Fig. 5 is a further embodiment of a flat mop cover with two active layers laterally next to each other, and

Fig. 6 is a plan view of a further embodiment of a flat mop cover, with one edge lifted to show that it has three active layers.

Now, Fig. 1 shows a flat mop cover 1 for a mopping device for mopping surfaces to be cleaned. This flat mop cover 1, as all other flat mop covers explained here, may be manufactured from textile material, either a woven fabric or a non-woven or knitted fabric of natural or synthetic fibers like polyester micro-fibers, or the like. Reference is, again, made to the co-pending application PCT/EP 2004/.....; attorney's reference 04.0739. Further reference is made to the prior art cited in the introductory part of the description. This prior art, at length, explains different types of textile material for use in flat mop covers as used here.

Now, the flat mop cover 1 shown in Fig. 1 in a plan view has exactly two active layers 2, 3 of preferably and here realized different properties. A first active layer 2 may be a textile material with backing and trimming of different fibers, particularly suitable for wet cleaning a surface, whereas the second active layer 3 may be constructed to be particularly suited for dry cleaning or drying of an already wet surface. Other requirements may be the use of a scrubbing layer in combination with a softer and/or wet cleaning layer.

Fig. 1 shows a plan view of the flat mop cover 1 from the cleaning surfaces 2', 3' of the active layers 2, 3, whereas the plan view in Fig. 2 shows the view towards the opposite side of the flat mop cover 1. There, the backing material 4 can be identified, whereas in Fig. 1, the trimming material forming the cleaning surfaces 2', 3' is specifically indicated. Such trimming material may be loop-forming material, such as terrycloth, or straight, densely positioned fibers like velvet, preferably of synthetic micro-fibers.

Fig. 2 shows attachment means 5 in the form of holding strips extending transversally across the backing material 4 of the flat mop cover 1. Fig. 3 shows how a schematically displayed mop holder 6 is positioned on top of the mop cover 1 with the ends below holding strips 5 and position-fixing means 7 on the mop holder positioning the mop cover 1 properly on the mop holder 6. For this, again, please refer to the prior art of WO 03/020100 A.

As can be seen from Figs. 1 to 3 together, here, the two active layers 2, 3 are geometrically and hydraulically separated by a liquid-impermeable or other not liquid transporting, separating section 8. The separating section 8, here, separates the two active layers 2, 3 that are positioned laterally next to each other and so is a separating strip geometrically and hydraulically separating the two active layers 2, 3. In the present embodiment, the separating section 8 is made from a net-like, synthetic fiber material. Any other materials may be used for this purpose.

In the present embodiment, the separating section 8 is a separate part and made from a material different from the backing material 4 of the flat mop cover 1. However, the material of the separating section 8 is connected to the neighboring active layers 2, 3, namely to their backing material 4.

As an alternative, however, the separating section 8 may be of the same material of the backing material of the neighboring active layers 2, 3. Then, the separating section 8 may formed unitarily with the backing material 4 of both layers 2, 3. Of course, this needs a backing material 4 that is not liquid transporting. In this kind of design, the liquid-adsorbing and/or distributing material of an active layer 2; 3 is concentrated in the trimming of the specific layer 2, 3.

Now, Fig. 4 shows a different embodiment obtained from a co-pending, parallel international patent application of the applicant, namely PCT/EP 2004/....., attorney's reference 03.1461. The flat mop cover 1 used here has one longitudinal edge section provided with a gripping counter-formation 9 that co-acts with gripping means on a mop holder not displayed here. For details, reference should be made to the above-mentioned co-pending PCT application.

The sectional view in the enlarged part of Fig. 4 shows that, here, two active layers 2, 3 are positioned on top of each other, thus forming two opposite, alternately usable cleaning surfaces 2', 3', which are, here, of about the same size. In between the two active layers 2, 3 is a liquid-impermeable separating layer as separating section 8. The two layers 2, 3 may have different properties and the separating section 8 means an essential advantage for two-step mopping with a wet side and a dry side.

Fig. 5 shows a further embodiment of a flat mop cover with two active layers 2, 3 laterally next to each other, both layers having different properties and the layers being separated by a separating section 8, which is liquid-impermeable or otherwise not liquid transporting. Here, however, the measures of the first active layer 2 are such that a standard mop holder 6 is positioned only on this active layer 2, whereas the neighboring active layer 3 is free from any mop holder 6. So the attachment means 5 is in the area of the first active layer 2 only, whereas the second active layer 3 is used in cleaning as an additional mopping means.

In general, mop covers 1 and mop holders 6 for professional floor cleaning have a length of approximately 20 cm to approximately 100 cm, preferably of approximately 40 cm to approximately 60 cm. The width is preferably about 20 cm. So, in this embodiment, the width of the flat mop cover 1 doubles to about 40 cm, although a standard mop holder 6 can be used.

Fig. 6 shows a further and final embodiment of the flat mop cover 1 according to the invention. Here, three active layers 2, 3, 10 are provided and combined in an asymmetrical one-layer/two-layer combination with the attachment means 5 positioned on top of the one-layer section. One separating section 8 separates the active layers 2, 3, whereas a second separating section 8' separates the active layer 3 from the co-planar active layer 10 with the cleaning surface 10'. The attachment means 5 is in the one-layer section on active layer 2.

In the present embodiment, a further improvement for the flat mop cover 1 is realized in that the separating section 8 is of the same material as a backing material of the neighboring active layers 2, 3 and is unitarily formed therewith. However, it is equally possible that the separating section 8 is a separate part, but connected to the neighboring active layers 2, 3 and, preferably, from a different material than the material of the neighboring active layers 2, 3. Finally, in the preferred embodiment and as indicated in Fig. 6, it may be provided that the separating section 8 is made from a net-like material from preferably synthetic fibers.

Claims:

1. Flat mop cover for a mopping device for mopping surfaces to be cleaned, comprising
at least two active layers (2, 3) of preferably different properties forming corresponding cleaning surfaces (2', 3'), and
attachment means (5) for attaching the flat mop cover (1) to a mop holder (6),
characterized in that
at least two of the active layers (2, 3) are hydraulically separated by a liquid-impermeable or otherwise not liquid-transporting, separating section (8, 8').

2. Mop cover according to claim 1, characterized in that
two active layers (2, 3) are positioned laterally next to each other and the separating section (8) is a separating strip between the layers.

3. Mop cover according to claim 1 or 2, characterized in that
two active layers (2, 3) are positioned on top of each other forming two opposite, alternately usable cleaning surfaces (2', 3'), preferably of about the same size, and
the separating section (8) is a liquid-impermeable separating layer between the two active layers (2, 3).

4. Mop cover according to any one of the preceding claims, characterized in that
three active layers (2, 3, 10) are provided and combined in an asymmetrical one-layer/two-layer combination with the attachment means (5) positioned on top of the one-layer section.

5. Mop cover according to any one of the preceding claims, characterized in that
the total size of the mop cover is much more than the size, preferably more than twice the size, of an assigned mop holder (6) and
only one layer (2) of the two layers (2, 3) is provided with the attachment means (5) for the mop holder (6).

6. Mop cover according to any one of the preceding claims, characterized in that
the separating section (8) is of the same material as a backing material of the neighboring active layers (2, 3) and is unitarily formed therewith.

7. Mop cover according to any one of claims 1 to 5, characterized in that
the separating section (8) is a separate part, but connected to the neighboring active layers (2, 3) and, preferably, is from a different material than the material of the neighboring active layers (2, 3).

8. Mop cover according to claim 7, characterized in that
the separating section (8) is made from a net-like material from preferably synthetic fibers.

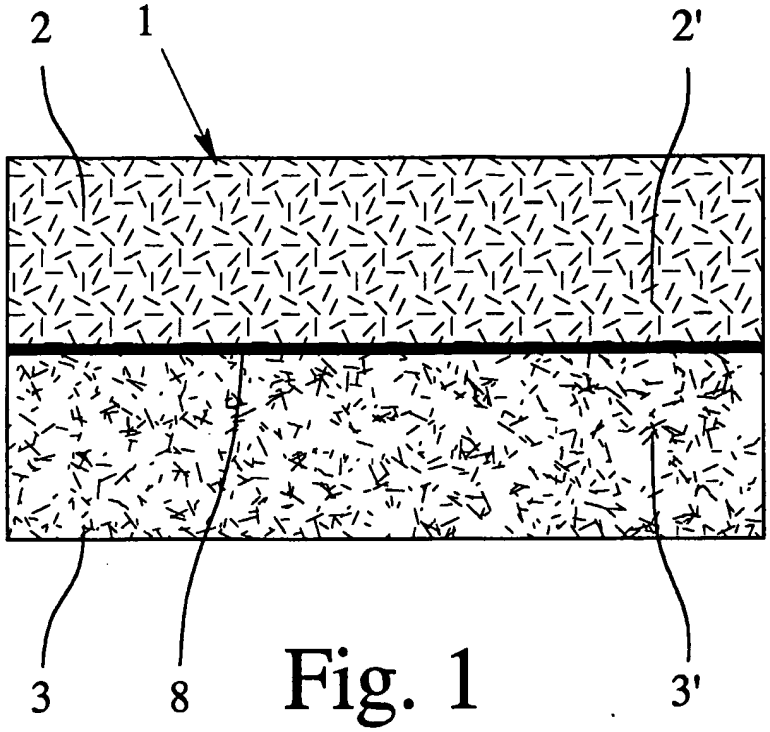

Fig. 1

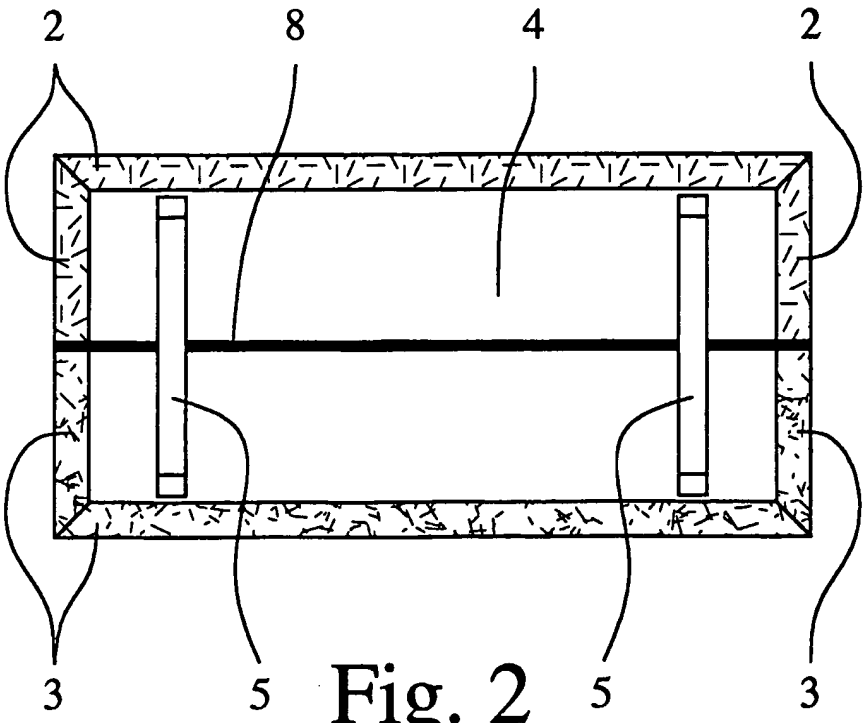

Fig. 2

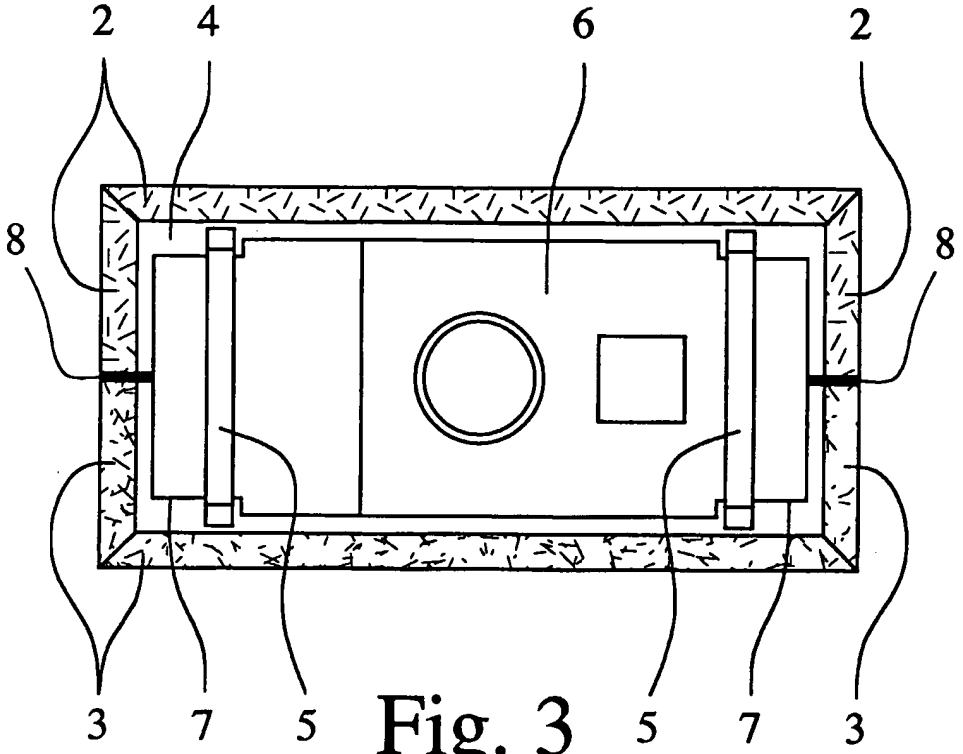

Fig. 3

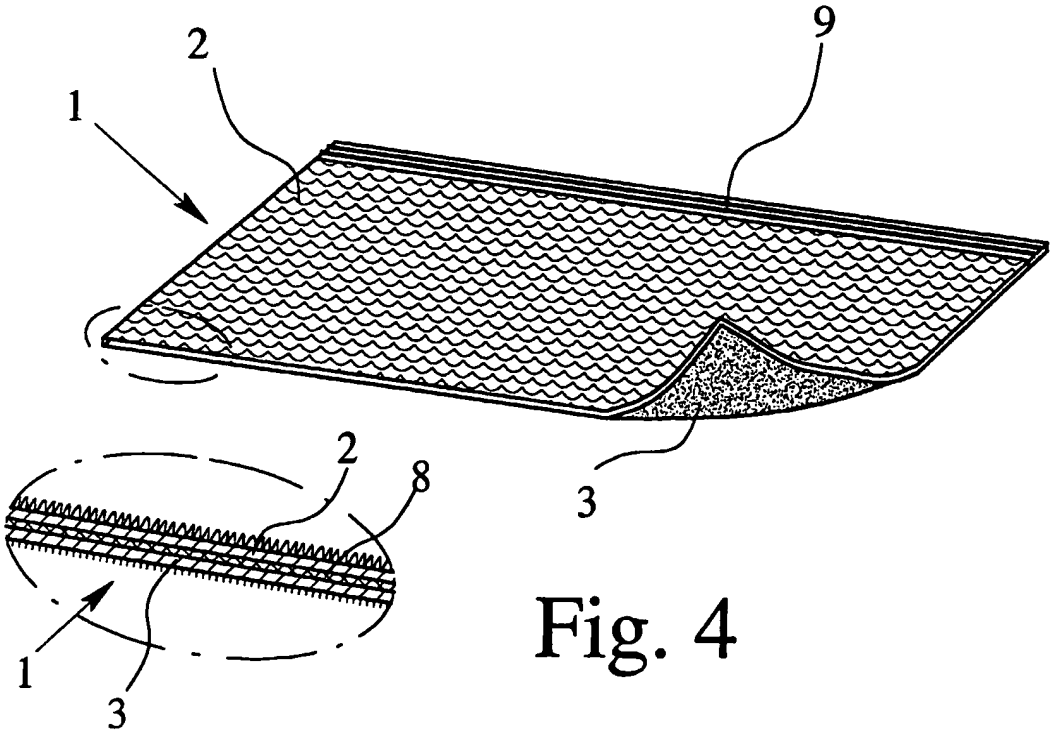

Fig. 4

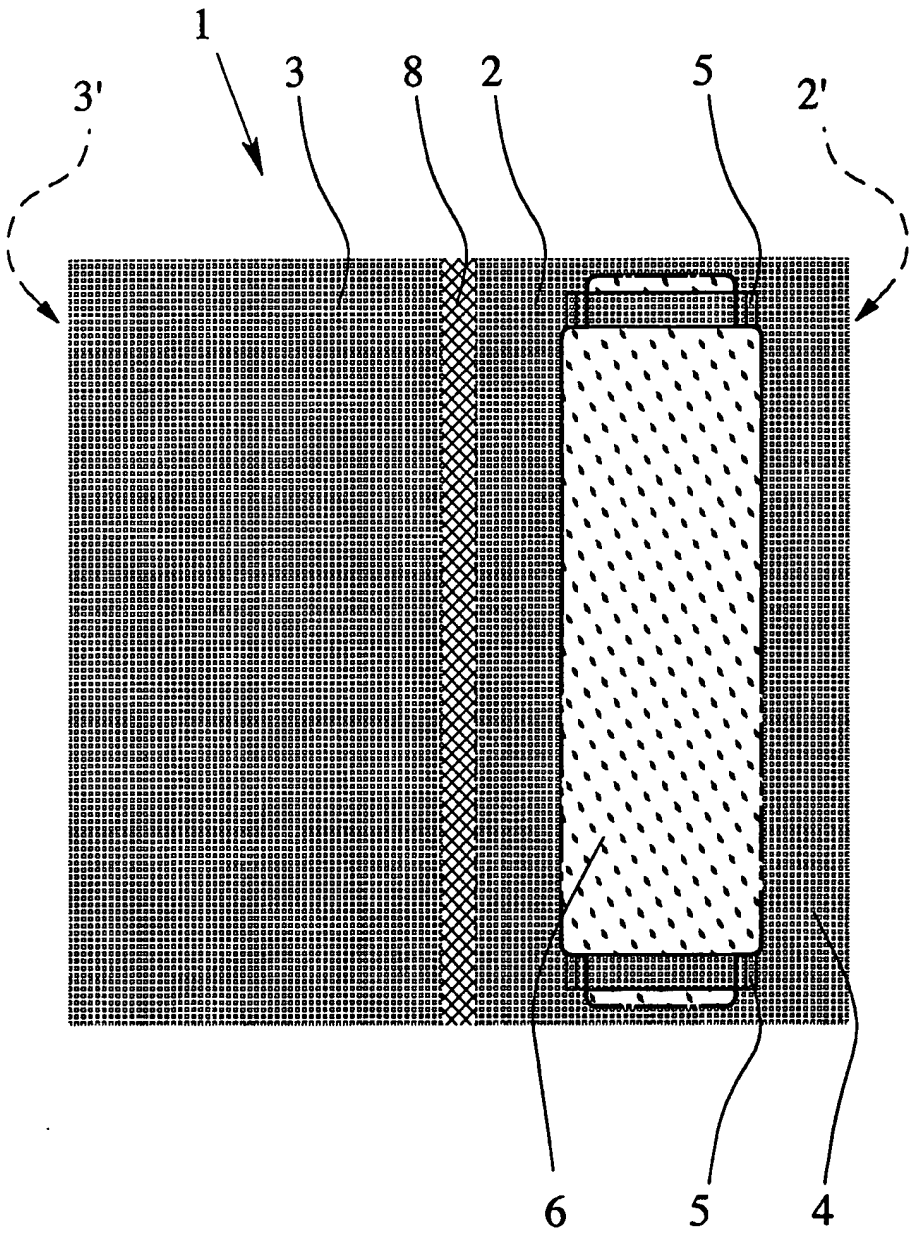

Fig. 5

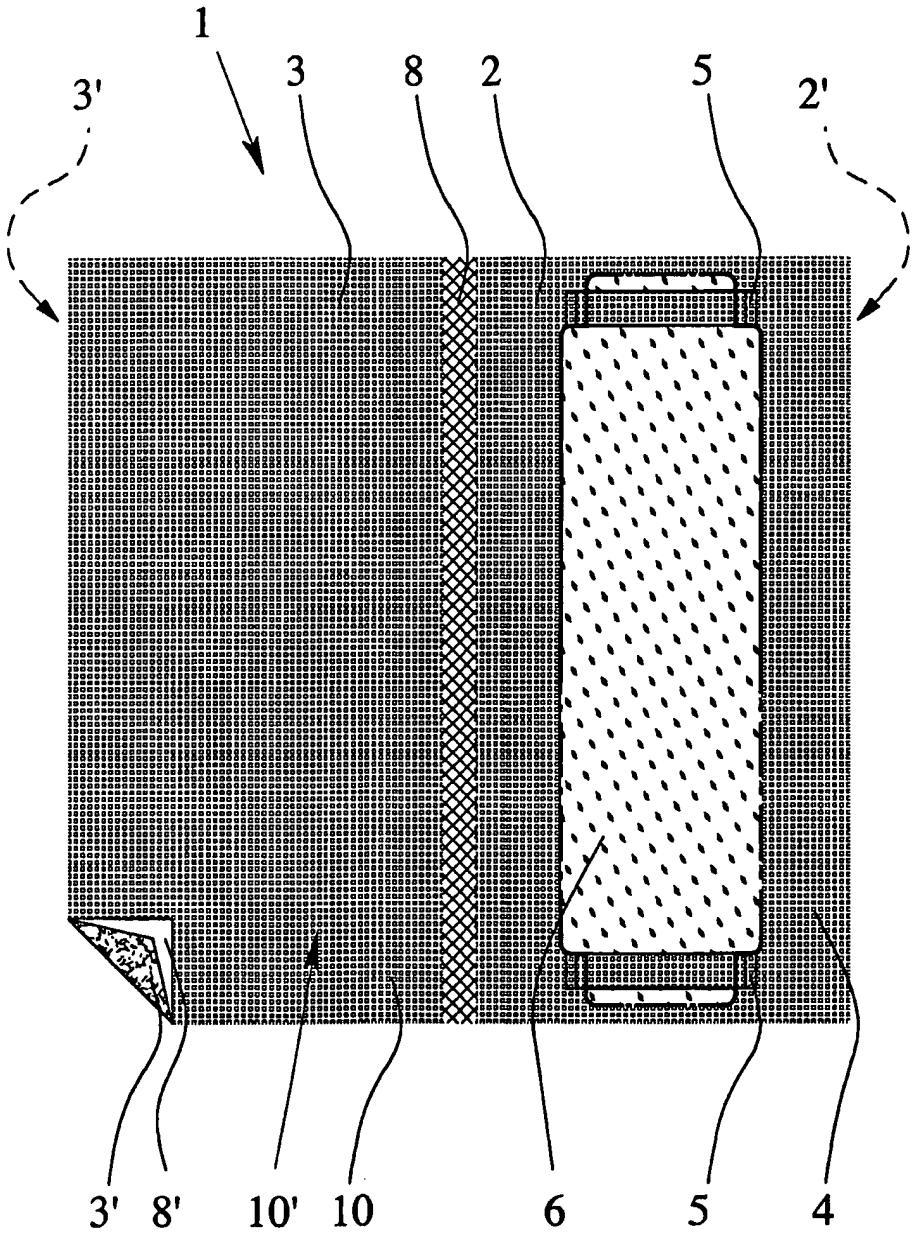

Fig. 6

INTERNATIONAL SEARCH REPORT

International Application No
T/EP2004/007013

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 A47L13/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 A47L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 94 02 509 U (BURKHARDT MARGARETE) 7 April 1994 (1994-04-07) cited in the application claims; figures	1,2,6
A	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 19, 5 June 2001 (2001-06-05) & JP 2001 037697 A (MINAMII ISAO), 13 February 2001 (2001-02-13) abstract; figures	1,3,7

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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Date of the actual completion of the international search	Date of mailing of the international search report
23 September 2004	04/10/2004

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No
T/EP2004/007013

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 9402509 U	07-04-1994	DE 9402509 U1	07-04-1994
		AU 1578195 A	04-09-1995
		WO 9522277 A1	24-08-1995
JP 2001037697 A	13-02-2001	NONE	